



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/792,300

03/03/2004

Chih-Hsi Lai

251702-1320

4675

24504

7590

01/24/2006

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP
100 GALLERIA PARKWAY, NW
STE 1750
ATLANTA, GA 30339-5948

EXAMINER

EDWARDS, ANTHONY Q

ART UNIT

PAPER NUMBER

2835

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/792,300	Applicant(s) LAI, CHIH-HSI	
	Examiner Anthony Q. Edwards	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12, 13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12, 13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 15-20 are objected to because of the following informalities: independent claim 12 recites a "heat-dissipating module" in the preamble, but dependent claims 15-20 further limit an "electronic device." The "electronic device" is recited in claims 1-10. Appropriate correction is required.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12, 15-17 and 20 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 6,678,157 to Bestwick. Referring to claim 12, Bestwick discloses a heat-dissipating module (see Fig. 5) for providing heat transfer and convection on at least one first heat source (20) and at least one second heat source (not shown) located in a housing (see col. 5, lines 29-30) by an initial airflow (A), i.e., the flow lines to the immediate left of fan 48 in Fig. 5, of a surroundings, comprising at least one conductive assembly (22) disposed on the first heat source (20) to absorb heat transferring from the first heat source, at least one first fan assembly (48) located between the surroundings (i.e., rear of housing) and the

Art Unit: 2835

conductive assembly (22), wherein the first fan assembly (48) introduces the initial airflow of the surroundings into the conductive assembly to form at least one first airflow (i.e., airflow to the immediate right of assembly 22, see col. 5, lines 11-19), and the first airflow passes the second heat source (not shown, but referred to at col. 5, lines 29-30) to form at least one second airflow (i.e., airflow just prior to fan 12), and temperature ingredient is yielded between the first airflow and the second airflow. Bestwick teaches "temperature ingredient yields" between the first airflow and the second airflow, since the first airflow still has capacity to absorb heat from the second heat source (see col. 5, lines 29-30), after absorbing sufficient heat energy from first heat source (20).

Regarding the limitation of the second heat source having temperature (" T_{Q2} " hereinafter) higher than that of the first airflow (" T_{F1} " hereinafter), the following thermodynamic principles of heat transfer apply:

$$\text{If, } T_{Q2} > T_{F1}, \text{ then } T_{F1} < T_{Q2},$$

Although Bestwick does not specifically disclose $T_{Q2} > T_{F1}$, Bestwick does teach sufficient temperature yield being available to cool Q2 (see col. 5, lines 29-30).

Therefore, Bestwick implicitly teaches $T_{F1} < T_{Q2}$ which is equivalent to $T_{Q2} > T_{F1}$.

Referring to claim 15, Bestwick discloses a heat-dissipating module, wherein the housing comprises an inlet (i.e., 18 in wall 16), and the first fan assembly (48) is disposed between the inlet and the conductive assembly (22). See Fig. 5 and col. 5, lines 12-16.

Referring to claim 16, Bestwick discloses a heat-dissipating module, wherein the conductive assembly (22) has a heat-transfer unit connected to the first heat source (20). See Fig. 5 and col. 5, lines 16-18.

Referring to claim 17, Bestwick discloses a heat-dissipating module, wherein the first heat source comprises a CPU. See col. 5, line 2.

Referring to claim 20, Fig. 5 of Bestwick shows a heat-dissipating module, further comprising a second fan assembly (12) disposed on one side of the housing conducting the second airflow to the surroundings.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bestwick in view of U.S. Patent No. 6,704,199 to Wiley. Bestwick does not specifically disclose a heat-dissipating module, wherein the temperature of a first heat source is higher than that of a second heat source. Wiley teaches ventilating or cooling elements in a digital data processing apparatus, wherein the temperature of a first heat source (54) is higher than that of a second heat source (i.e., "downstream components"). See Fig. 3 and col. 4, line 65 through col. 5, line 12.

It would have been obvious to one having ordinary skill in the art at the time of the invention to provide cooling for a first heat source of Bestwick that has a higher

temperature than that of a second heat source, as taught by Wiley, since the device of Wiley would ensure that the heat generating devices of Bestwick producing the most heat (such as the CPU) would receive the most effective cooling temperatures, prior to secondary components (e.g., memory modules), since CPU devices are sensitive to over-heating and are very expensive to replace.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bestwick in view of U.S. Patent Application Publication No. 2005/0041391 to Wrycraft et al. ("Wrycraft" hereinafter). Referring to claim 18, Bestwick discloses the invention as claimed, except for the second heat source (i.e., "other components") specifically comprising a memory module. Wrycraft teaches an electronics assembly with arrangement for air-cooling (see Fig. 1), wherein a first heat source (15) is cooled by an initial airflow, creating a heated first airflow and a second heat source comprising a DRAM (8) is cooled by the first airflow creating a second airflow. See Figs. 1 and 2 and paragraph [0030]. It would have been obvious to one having ordinary skill in the art at the time of the invention to provide cooling for a second heat source of Bestwick, wherein that second heat source is a memory module, as taught by Wrycraft, since the device of Wrycraft would provide more efficient use of memory modules in the system of Bestwick by cooling the DRAM during use.

Referring to claim 19, Bestwick discloses the invention as claimed, except for further comprising a conductive pipe transferring heat from the conductive assembly to one side of the first fan assembly. Wrycraft discloses providing heat-pipes to enhance the thermal conductivity of the heat sink 20 (see paragraph 0033). It would have been

Art Unit: 2835

obvious to one having ordinary skill in the art at the time of the invention to modify the conductive assembly of Bestwick to include a conductive pipe to transfer heat from the conductive assembly to one side of the first fan assembly, as taught by Wrycraft, since the device of Wrycraft would lower the temperature of the first airflow and, therefore, allow for greater heat dissipation of heat sources "downstream" or at the latter stages of the cooling process.

Claims 1, 3-7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bestwick in view of U.S. Patent No. 6,856,505 to Venegas et al. ("Venegas" hereinafter). Referring to claim 1, Bestwick teaches an electronic device substantially as claimed, except for the device including a display unit electrically connected to the circuit. Venegas (see Fig. 1) teaches providing display unit (26) electrically connected to server rack (12), via a circuit (30). See col. 4, lines 35-61.

It would have been obvious to one having ordinary skill in the art at the time of the invention to provide the system of Bestwick with a display electrically connected to a circuit of the system or rack, as taught by Venegas, since the device of Venegas would provide a retraceable flat panel display for the rack server system of Bestwick.

Referring to claim 3, Bestwick in view of Venegas disclose an electronic device as claimed, including the first fan (48) being disposed near one side of the housing. See above rejection to claim 13 as well as Fig. 5 of Bestwick.

Referring to claim 4, Bestwick in view of Venegas disclose an electronic device as claimed. See the above rejection to claim 15.

Referring to claim 5, Bestwick in view of Venegas disclose an electronic device as claimed. See the above rejection to claim 16.

Referring to claim 6, Bestwick in view of Venegas disclose an electronic device as claimed, including the heat-transfer unit comprising a fin structure. See col. 5, lines 16-22 of Bestwick.

Referring to claim 7, Bestwick in view of Venegas disclose an electronic device as claimed. See the above rejection to claim 17.

Referring to claim 10, Bestwick in view of Venegas disclose an electronic device as claimed. See the above rejection to claim 20.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bestwick in view of Venegas, and further in view of Wrycraft. Referring to claim 8, see the above rejections to claim 18. Additionally, the second heat source comprising a memory module is met by Wrycraft. See Figs. 1 and 2 and paragraph [0030].

Referring to claim 9, see the above rejections to claim 19. Additionally, the conductive pipe transferring heat from the conductive assembly to one side of the first fan assembly is met by Wrycraft (see paragraph 0033).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bestwick in view of Venegas, and further in view of Wiley. See the above rejection to claim 13.

Response to Arguments

Applicant's arguments filed October 24, 2005 relating to claims 12, 13, 15-17 and 20 have been fully considered but they are not persuasive. Regarding claims 12, 15-17 and 20, as indicated in the above rejection, although Bestwick does not specifically

disclose $T_{Q2} > T_{F1}$, Bestwick does teach sufficient temperature yield being available to cool component Q2 (see col. 5, lines 29-30). Therefore, Bestwick implicitly teaches $T_{F1} < T_{Q2}$ which is equivalent to $T_{Q2} > T_{F1}$.

Applicant's arguments relating to claims 18 and 19 (claim 14 was cancelled by applicant) have been fully considered but they are not persuasive. Examiner has relied on Wrycraft to simply show that it would have been obvious to include a memory device where Bestwick does not specifically disclose the "at least one second heat source" located in a housing (see col. 5, lines 29-30) of Bestwick.

Applicant's arguments with respect to claims 1-7 and 10 (as well as claims 8 and 9) have been considered but are moot in view of the new ground(s) of rejection. The Applicant can refer to the above rejection regarding said claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2835

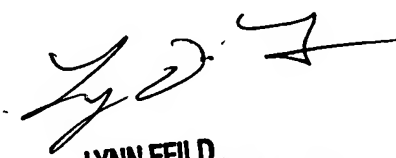
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Q. Edwards whose telephone number is 571-272-2042. The examiner can normally be reached on M-F (7:30-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on 571-272-2800, ext. 35. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 12, 2006
aqe



LYNN FEILD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800